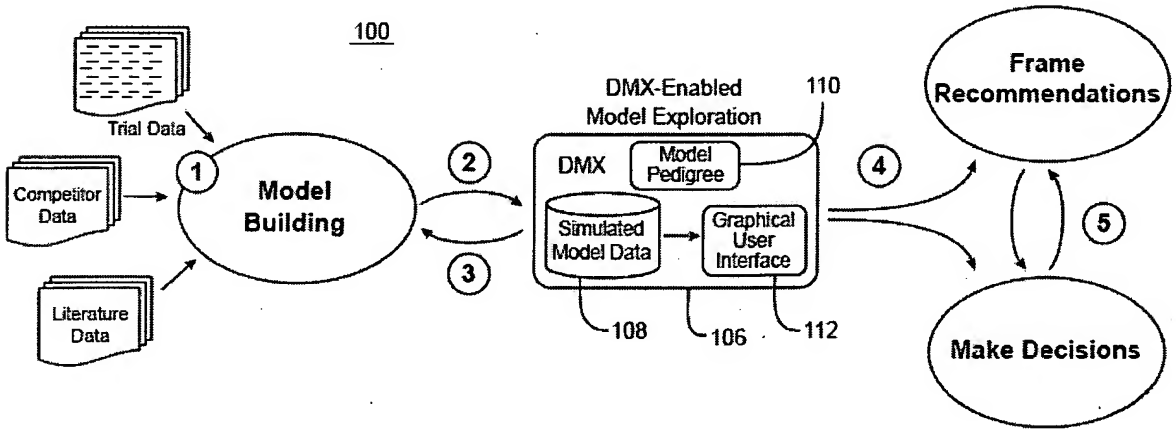
REMARKS/ARGUMENTS

Claims 1-28 are canceled by this response without prejudice to filing a continuation application directed thereto. Claims 29-49 are added. Accordingly, claims 29-49 are currently pending in the instant application.

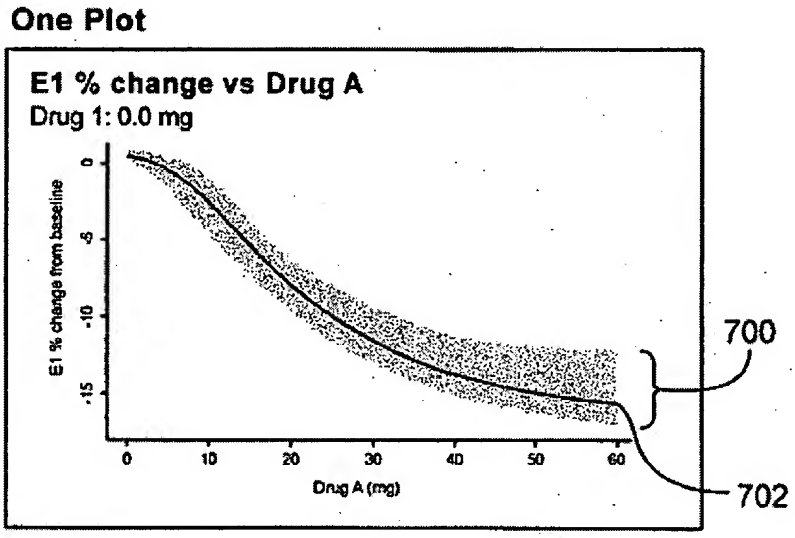
Embodiments in accordance with the present invention relate to methods and software programs allowing the outputs of models for complex phenomena such as clinical trials and drug performance, to be interrogated, explored, and viewed by members of a drug development team. Such models are typically constructed utilizing available data such as data from actual clinical trials, data from competitors, and data from the published literature.

Once such a model has been constructed, data from the model is loaded into the DMX software, as shown and described in connection with Figure 1 (reproduced below) of the instant application:

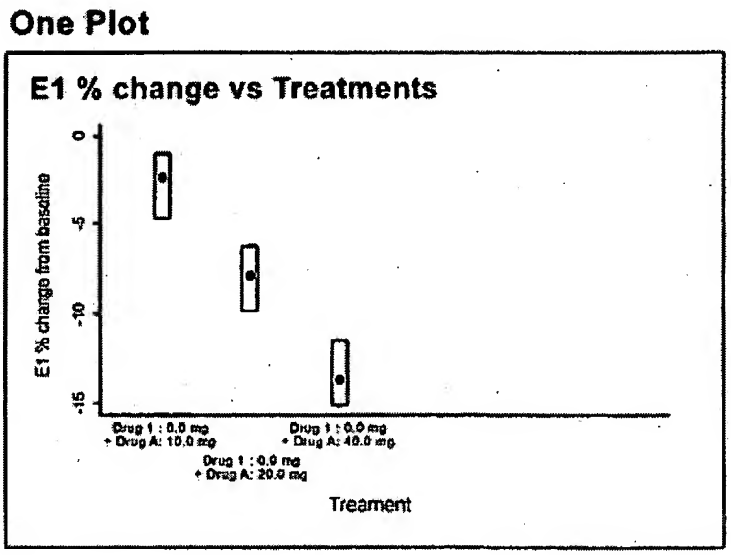


> results from the drug models are loaded into the DMX software 106. The DMX software may be populated with a simulated database 108 containing the probability distribution of a summary statistics such as mean or fraction of patients above a target, for efficacy, safety, or other endpoints as a function of specific model inputs, such as treatment options (drug, dose, dose frequency, etc.), patient populations, and assumptions. Database 108, and its associated metadata, characterizes the 'space' that can be explored by the DMX software. The analyst may also populate the DMX software with an overview of the model pedigree 110 (documentation on source data, validation, conclusions). (Emphasis added; ¶**[0048]**)

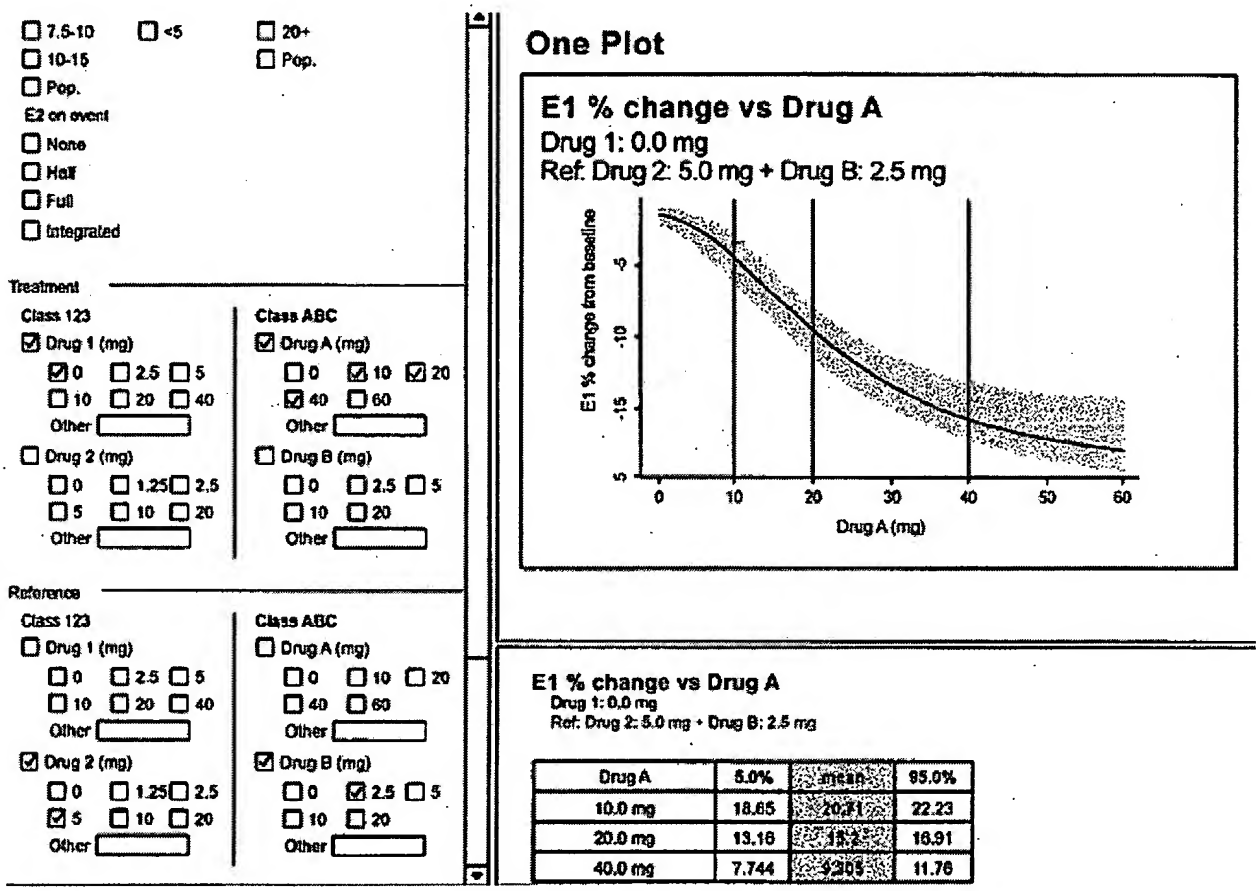
Once the results of the drug models have been provided, the graphical user interface (112) allows a user to interrogate and view the data in various ways. For example, as described in the instant application at ¶[0049] and illustrated in Figure 7B (reproduced in part below), the user may graphically view the expectation and uncertainty (percentile uncertainty bands) of selected endpoints as a function of continuous input variables (xy-plot):



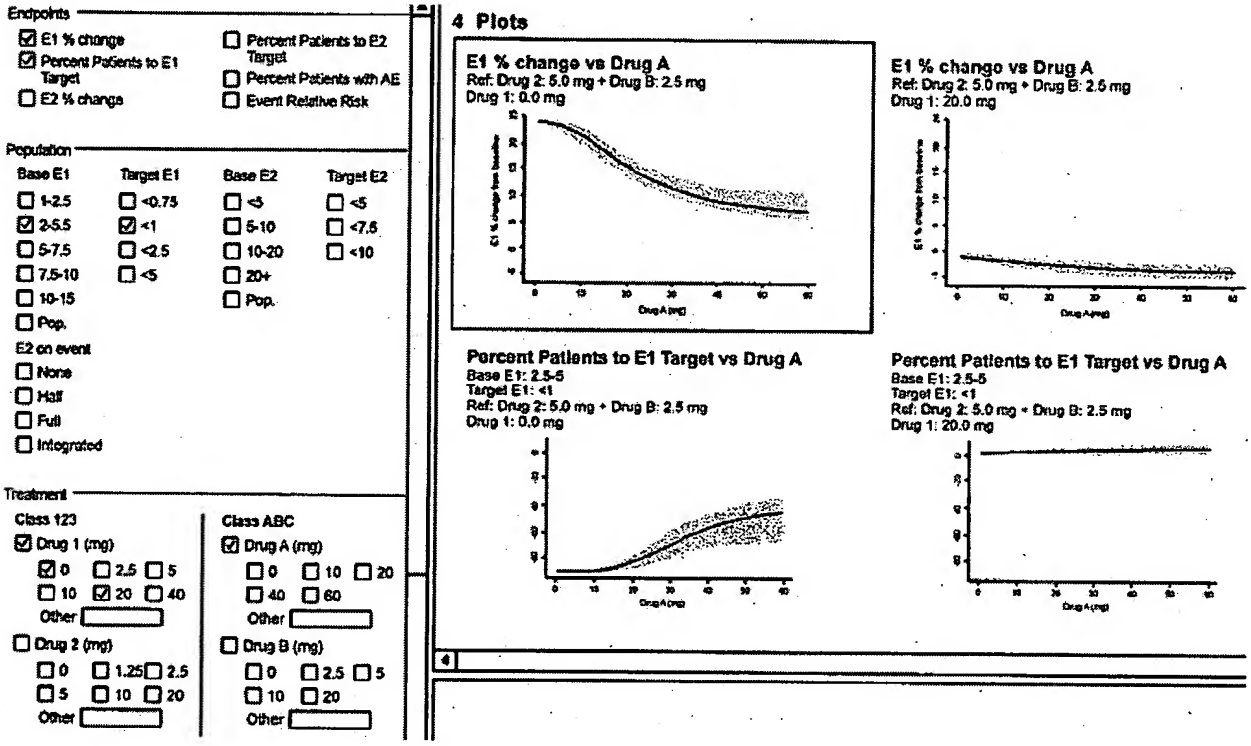
As described in the instant application at ¶[0049] and illustrated in Figure 7D (reproduced in part below) the user may view as a box-plot, the expectation and uncertainty (percentile uncertainty bands) of selected endpoints as a function of discrete input variables:



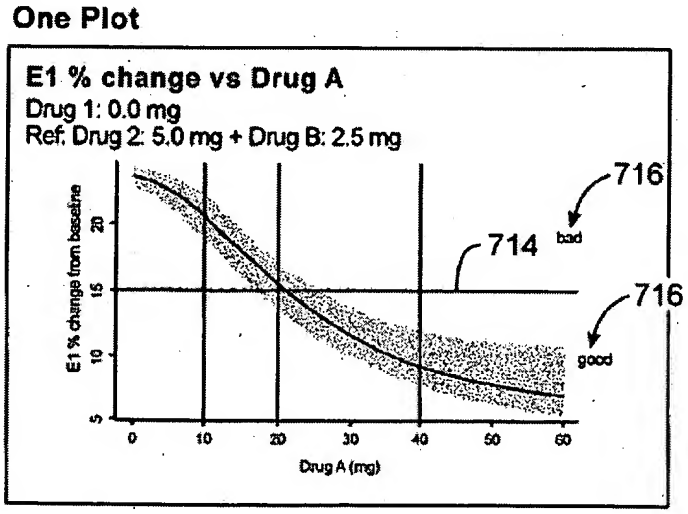
As described in the instant application at ¶[0050] and shown in Figure 7F (reproduced in part below), the graphical user interface may also allow a user to view in graphic and/or tabular form, the expectation and uncertainty of the difference in an endpoint between one set of input variables and another set of input variables, for example a reference.



As described in the instant application at ¶[0051] and illustrated in Figure 7L (reproduced in part below), the graphical user interface may also allow a user to view multiple endpoints for multiple combinations of input variables and multiple references.



As described in the application at ¶[0051] and illustrated in Figure 7I (reproduced in part below), the user interface may also allow a user to partition an endpoint into categories.



In the latest office action, the Examiner indicated that then-pending claims 1-28 were not entitled to claim priority to U.S. Provisional Patent Application No. 60/511,602 ("the Provisional Application"), filed October 14, 2003. Without agreeing with the Examiner's assertion, claims 1-28 are canceled without prejudice to filing continuation applications directed thereto. New claims 29-49 are added having language taken directly from the Provisional Application, as summarized in the following TABLE:

TABLE

CLAIM	CLAIM LANGUAGE	PROVISIONAL APPLICATION
29	populating a database with data from a model of drug behavior, the data comprising a probability distribution of a statistic and associated metadata receiving at a user interface an input variable from a user, the input variable comprising at least one of a treatment option, a patient population, and an assumption of the model; applying the input variable to the data; and	**¶[0011];** Figure 1
	displaying on the user interface an output resulting from application of the input variable to the data.	**¶[0012];** drawing Figures
	the output comprises uncertainty in a selected endpoint as a function of input variables.	
30	the summary statistic comprises at least one of an endpoint, a fraction of patients above an efficacy target, and a fraction of patients above a safety target.	**¶[0011];** drawing Figures
31	the treatment option comprises an identity of a drug, a dose of the drug, and a dose frequency of the drug.	
32	the input variables are continuous, and the output comprises an xy-plot.	**¶[0012];** page 3 of drawing figures - "Clinical Effect: Continuous"
33	the input variables are discrete, and the output comprises a box plot.	**¶[0012];** page 4 of drawing figures - "Clinical Effect: Discrete"
34	the output comprises an uncertainty in a difference in an endpoint between an input variable set including the input variable, and a second variable set.	**¶[0013];** page 8 of drawing figures - "Reference-based
35	the second variable set comprises a reference.	

36	selecting with the user interface, the reference for display.	Output"
37	multiple input variables are received from the user; and the output comprise multiple endpoints for multiple combinations of the input variables.	**¶[0014];** page 6 of drawing figures - "Multidimensional Matrixed Output"
38	one of the multiple input variables comprises a reference.	
39	partitioning an output into a category.	**¶[0014];** page 12 of drawing figures - "Range Display"
40	selecting an endpoint for display.	
41	selecting an input variable for display.	
42	partitioning the output into a plurality of categories.	
43	displaying a probability of achieving a particular category for multiple combinations of input variables.	
44	displaying a value of the input variable required to achieve a particular category.	
45	selecting with the user index, a plurality of input parameters to construct a clinical utility index.	**¶[0014]**
46	pre-defining an output view.	
47	one of saving the pre-defined view, restoring the pre-defined view, and sharing the pre-defined view with another user.	
48	populating the database with a model pedigree.	**¶[0011];** Figure 1
49	the model pedigree comprises at least one of a source of the data, a validation of the model, and conclusions of the model.	

Based at least upon the literal correlation between claim elements recited in claims 29-49 and the disclosure of the Provisional Application explicitly demonstrated in the above TABLE, it is respectfully asserted that the pending claims are entitled to claim the October 14, 2003 priority date of the Provisional Application. The Examiner is requested to provide a notice to this effect in the next office action.

The Examiner also rejected each of the formerly pending claims as lacking utility under 35 U.S.C §101. The instant application has now been amended to cancel the original claims, and to add new claim set 29-49, technically rendering moot the instant claim rejections.

However, in the interest of forestalling any rejection of the new claims on these same grounds, the Examiner is respectfully directed to the guidelines for determining compliance with the Utility requirement that are set forth in the Manual of Patent Examining Procedure (MPEP). Specifically, MPEP 2107(II)(B)(1) emphasizes:

> **2107 Guidelines for Examination of Applications for Compliance with the Utility Requirement**
> If the applicant has asserted that the claimed invention is useful for any particular practical purpose (i.e., it has a "specific and substantial utility") and the assertion would be considered credible by a person of ordinary skill in the art, do not impose a rejection based on lack of utility. (Emphasis added)

Here, the instant specification describes the specific problem addressed by claimed embodiments:

> questions regarding early stage clinical drug development are conventionally answered by focusing upon several independent representations of the characteristics of drug candidate compounds, for example summaries of specific results from independent trials and experiments. These independent pieces of information are circulated and discussed to support decisions on the continued development of the compound. (**¶[0017]**)

Such independent representations, however, fail to provide a comprehensive response to critical questions, and also fail to quantify the risk of relying upon them for decision-making. (**¶[0018]**)

The instant specification then goes on to unequivocally express the utility achieved by the claimed embodiments:

> corresponding output is presented to the user in a number of plot and tabular formats. The software thus facilitates non-expert interaction with complex drug behavior models, streamlining the drug development process by providing decision-makers with a standardized framework for characterizing drug behavior across different candidates, across different models, and in relation to different competitors. (Emphasis added; **¶[0025]**)

Based at least on the above, there can be no reasonable question that Applicants have indeed established sufficient practical purposes for the claimed invention, purposes that would readily be recognized by one of ordinary skill in the art. Accordingly, the burden imposed by the Examination Guidelines set forth in MPEP §2107 has clearly been met, and rejection of the newly pending claims as lacking utility, is improper.

The Examiner also rejected all of the formerly pending claims as indefinite under 35 U.S.C §112. Again, while those claims have now been canceled, the following remarks emphasize the definiteness of the newly presented claims.

As a threshold matter, the Examiner is reminded of the wide latitude afforded an Applicants in their choice of terms utilized to defining the invention:

> A fundamental principle contained in 35 U.S.C. §112, ¶2 is that applicants are their own lexicographers. . . . Applicant may use functional language, alternative expressions, negative limitations, or any style of expression or format of claim . . . . (Emphasis added; MPEP §2173.01)

Accordingly, the Examiner:

> should allow claims which define the patentable subject matter with a reasonable degree of particularity and distinctness. Some latitude in the manner of expression and the aptness of terms should be permitted even though the claim language is not as precise as the examiner might desire. (Emphasis original; MPEP §2173.02)

As described at length in the above TABLE, the meaning of each of the elements recited in independent claim 29, and in claims 30-49 depending therefrom, is described in the text of the Provisional Application, and often accompanied by illustration in a drawing figure. The meaning of many of these claim terms is, moreover, supplemented by additional description and illustration in the instant nonprovisional application.

Based at least upon this reasonable disclosure of the meaning of the terms in the pending claims, it is respectfully asserted that these claim terms are certainly definite. Accordingly, the burden imposed by 35 U.S.C. §112 has clearly been met, and rejection of the newly pending claims as indefinite, is improper.

Turning finally to claim rejections based on the alleged prior art, the Examiner rejected every single one of the formerly pending claims as obvious under 35 U.S.C §103, based upon various combinations of references. The non-obviousness of the currently pending claims in view of these references is discussed as follows.

A first requirement to establish a prima facie case of obviousness, is that the combined prior art references must teach or suggest all of the claim limitations. (MPEP 2143). Independent claim 29 newly added to the instant application reads as follows:

> 29. A method comprising:
> populating a database with data from a model of drug behavior, the data comprising a probability distribution of a statistic and associated metadata;
> receiving at a user interface an input variable from a user, the input variable comprising at least one of a treatment option, a patient population, and an assumption of the model;
> applying the input variable to the data; and

> displaying on the user interface a graphical output resulting from application of the input variable to the data, the graphical output including uncertainty in a selected endpoint as a function of input variables. (Emphasis added)

The first reference relied upon by the Examiner to establish the obviousness of the former pending claims is U.S. patent no. 5,808,918 to Fink ("the Fink Patent"). The Fink Patent describes a physiologic model that is based on cellular activities. The Fink Patent fails, however, to teach or even suggest displaying a graphical output including uncertainty in a selected endpoint, as is recited by the claimed embodiments.

Combination of the Fink Patent with U.S. patent no. 6,457,017 to Watkins et al. ("the Watkins Patent") does nothing to provide this absent teaching. In particular, the Watkins patent generally describes only an information management system, and contains no specific reference to the uncertainty that is displayed in accordance with the claimed embodiments.

Moreover, the Examiner is reminded of a second key requirement for establishing a prima facie case of obviousness:

> there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. (MPEP 2143).

Such teaching or suggestion to make the claimed combination must be found in the prior art, not in applicant's disclosure. In re Vaeck, 947 F.2d 488 (Fed.Cir. 1991).

Here, there is absolutely no teaching in the Fink or Watkins references to suggest their combination. Specifically, while the Fink Patent relates to modeling of biological activity, the Watkins patent relates to a document management system having absolutely no specific relation or nexus with such biological information, that would motivate one of ordinary skill in the art to look to combine the teachings of the Fink Patent with the Herren Patent. This failure of the Fink and Watkins patents to provide motivation for their combination, would preclude any legitimate conclusion of obviousness based upon these references.

The Examiner also relied upon the combination of the Watkins patent with U.S. patent no. 6,108,635 to Herren et al. ("the Herren Patent'), in order to reject the pending claims as obvious. While the Herren patent does describe modeling of biological processes, this reference

fails to teach, or even suggest to teach or even suggest displaying a graphical output including uncertainty in a selected endpoint, as is recited by the claimed embodiments.

> Specifically, the Herren patent describes the display of information to a user as follows:
>
> methods of displaying the query results fall into three categories: graphical, numerical/statistical, or animation. Graphical displays plot actual values or category counts to produce line or bar graphs. Numerical/statistical displays exhibit descriptive statistics such as means and standard deviations. Finally, animation is used to show how relationships change overtime. (Emphasis added; col. 26, lines 61-67)

Thus while the Herren Patent does teach graphical display, the Herren Patent limits such graphical display to actual values or counts, explicitly excluding from this display category descriptive statistics such as means and standard deviations.

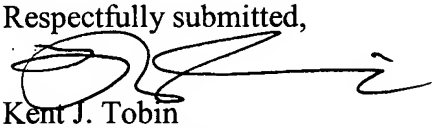
More importantly, however, there is absolutely no teaching in the above-excerpted passage, or anywhere else in the Herren patent, regarding graphical display of output including uncertainty in a selected endpoint. This stands in marked contrast with the claimed embodiments, which specifically recite an output in graphical form which includes such uncertainty in an endpoint

The Examiner has also combined the Watkins Patent with the Herren Patent in order to reject the claims as obvious. However, the Watkins Patent fails to provide any teaching or even suggestion to provide a graphical output of uncertainty in relation to analysis of a biological model. Moreover, the Watkins Patent relates to a general information management system, and thus provides absolutely no motivation for its combination with the Herren Patent.

Based at least upon the failure of the references relied upon by the Examiner to teach every element of the pending claims, or even to provide motivation for the combination of these references, it is respectfully asserted that the pending claims cannot be considered obvious. Continued maintenance of the obviousness claim rejections is improper, and the claim rejections should be withdrawn.

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance and an action to that end is respectfully requested. If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 650-326-2400

Respectfully submitted,



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